



South Carolina Electric and Gas
V. C. Summer Nuclear Station, Units 2 & 3
COL Application

COLA Table of Contents Navigation Page

[Part 1 — General and Administrative Information](#)

[Part 2 — Final Safety Analysis Report](#)

[Part 3 — Applicant's Environmental Report—Combined License Stage](#)

[Part 4 — Technical Specifications](#)

[Part 5 — Emergency Plan](#)

[Part 7 — Departures and Exemptions](#)

[Part 9 — Withheld Information](#)

[Part 10 — Proposed License Conditions and ITAAC](#)

[Part 11 — COLA Enclosure 1 - Subsurface Reports](#)

[Part 12 — COLA Enclosure 2 - Seismic Technical Advisory Review Letter](#)

[Part 13 — COLA Enclosure 3 - QAPD](#)

[Part 14 — COLA Enclosure 4 - Mitigative Strategies Description and Plans](#)

V. C. Summer Nuclear Station, Units 2 and 3
COL Application
Part 1, General and Administrative Information

1.0 INTRODUCTION

This Combined License Application (COLA) is submitted by South Carolina Electric & Gas Company (SCE&G) and the South Carolina Public Service Authority (commonly referred to as "Santee Cooper"), for construction and operation of two nuclear power generating plants designated as Virgil C. Summer Nuclear Station (VCSNS) Units 2 and 3. SCE&G is the principal subsidiary of SCANA Corporation, an energy-based holding company with headquarters in Cayce, South Carolina. Santee Cooper is South Carolina's state-owned electric and water utility, with corporate headquarters in Moncks Corner, South Carolina. SCE&G has been authorized by Santee Cooper to act as their agent in applying for a Combined License (COL) for VCSNS Units 2 and 3. In addition to seeking a COL to construct and operate VCSNS Units 2 and 3, this application also seeks, through the inclusion of appropriate provisions in the COL, authorization to possess and use such quantities of source, byproduct, and special nuclear material as are needed to construct and operate the new units.

VCSNS Units 2 and 3 are based on the Westinghouse AP1000 advanced light water reactor design. This application presents descriptions and analyses of the final station design and incorporates by reference, Appendix D to 10 CFR Part 52 as required by Section III.B of that Appendix as amended by Revision 17.

The Application comprises the following Parts:

- Part 1 - General and Administrative Information
- Part 2 - Final Safety Analysis Report (FSAR)
- Part 3 - Applicant's Environmental Report—Combined License Stage (Environmental Report)
- Part 4 - Technical Specifications
- Part 5 - Emergency Plan
- Part 6 - Not Used [Reserved for Limited Work Authorization requests]
- Part 7 - Departures and Exemptions
- Part 8 - Safeguards/Security Plans (provided under separate cover letter)
- Part 9 - Withheld Information
- Part 10 - Proposed License Conditions and ITAAC
- Part 11 - COLA Enclosure 1 – Subsurface Reports
- Part 12 - COLA Enclosure 2 – Seismic Technical Advisory Review Letter
- Part 13 - COLA Enclosure 3 – Quality Assurance Program Description
- Part 14 - COLA Enclosure 4 – Mitigative Strategies Description and Plans

The site for VCSNS Units 2 and 3 is located approximately 1 mile from the center of VCSNS Unit 1 in western Fairfield County. The Monticello Reservoir provides the water requirements of VCSNS Units 2 and 3. The reservoir is located east of the Broad River and west of South Carolina State Highway 215.

VCSNS Units 2 and 3 will be located approximately 15 miles west of Winnsboro, the county seat. Newberry, the county seat of Newberry County, is about 17 miles away in a westerly direction. Columbia, the South Carolina state capital, is located about 26 miles to the southeast. The Site Location Map, FSAR Figure

V. C. Summer Nuclear Station, Units 2 and 3
COL Application
Part 1, General and Administrative Information

1.1-201 shows the site with respect to nearby roads, highways and villages in the vicinity.

1.1 PURPOSE OF A COMBINED LICENSE APPLICATION

The purpose of a COLA is to obtain Nuclear Regulatory Commission (NRC) approval to construct and operate two nuclear power generating plants to be known as Virgil C. Summer Nuclear Station Units 2 and 3. The plants will be used to generate electric energy to supply to the electric systems of SCE&G and Santee Cooper for sale to distributors and consumers.

In support of this objective, SCE&G requests the following license actions:

- A license to construct and operate as a utilization facility Virgil C. Summer Nuclear Station Unit 2 as a class 103 license pursuant to Section 103 of the Atomic Energy Act of 1954, as amended, authorizing SCE&G to construct, own, possess, use and operate the utilization facility for the generation of electric energy to be transmitted over the respective electric systems of SCE&G.

It is requested that the term of the license be for a period of 40 years, and contain provisions, as needed, to possess and use at any time such quantities of source, byproduct, and special nuclear material as needed to construct and operate the utilization facility.

- A license to construct and operate as a utilization facility Virgil C. Summer Nuclear Station Unit 3 as a class 103 license pursuant to Section 103 of the Atomic Energy Act of 1954, as amended, authorizing SCE&G to construct, own, possess, use and operate the utilization facility for the generation of electric energy to be transmitted over the respective electric systems of SCE&G.

It is requested that the term of the license be for a period of 40 years, and contain provisions, as needed, to possess and use at any time such quantities of source, byproduct, and special nuclear material as needed to construct and operate the utilization facility.

1.2 COMBINED LICENSE APPLICATION FORMAT AND CONTENT

10 CFR Section 52.77 outlines the general information requirements for filing a COL application. In general, an application must contain information required by 10 CFR 50.33, Contents of Applications and General Information, as they would apply to applicants for construction permits and operating licenses. This information is provided in Table 1 of this Part.

1.2.1 Format and Content

As specified by Appendix D to 10 CFR 52, IV.A.2.a, the plant-specific DCD (FSAR), has in general retained the organization and numbering of AP1000 DCD, except where departures are taken and justified. Where departures are

V. C. Summer Nuclear Station, Units 2 and 3
COL Application
Part 1, General and Administrative Information

taken to section numbering to conform to Regulatory Guide 1.206 or the NRC's Standard Review Plan (SRP), a "roadmap" to the location of the descriptive material has been provided and left hand margin notations are provided.

Financial information is provided consistent with the "Standard Review Plan on Power Reactor Licensee Financial Qualifications and Decommissioning Funding Assurance" (NUREG-1577, October 2003).

1.2.2 Labeling Conventions

Tables of data are identified by the section or subsection number followed by a sequential number. Tables are located at the end of a section immediately following the text. Drawings, pictures, sketches, curves, graphs, plots, and engineering diagrams are identified as figures and are numbered sequentially by section or subsection similar to tables, and follow at the end of the applicable section or subsection. Text pages are numbered sequentially within each section or subsection.

Table 1.1-202 describes the left margin annotations used in the FSAR to identify departures, supplementary information, COL items, and conceptual design information.

FSAR tables, figures, and references are numbered in the same manner as the DCD, but the first new FSAR item is numbered as 201, the second 202, the third 203, and consecutively thereafter. When a table, figure, or reference in the DCD is changed, the change is appropriately left margin annotated as identified above. When it provides greater contextual clarity, an existing DCD table or figure is revised by adding new information to the table or figure and replacing the DCD table or figure with a new one in the FSAR. In this instance, the revised table or figure clearly identifies the information being added, and retains the same numbering as in the DCD, but the table or figure number is revised to end with the designation "R" to indicate that the table or figure has been revised and replaced. For example, revised "Table 4.2-1" would become "Table 4.2-1R."

1.2.3 Classified Information

In accordance with the requirements of 10 CFR 50.37, SCE&G will not permit any individual to have access to any facility to possess Restricted Data or classified National Security Information until the individual and/or facility has been approved for access under the provisions of 10 CFR parts 25 and/or 95.

1.2.4 References

1. NUREG-0800, "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants", Revision 3, March 2007.
2. NUREG-1577, "Standard Review Plan on Power Reactor Licensee Financial Qualifications and Decommissioning Funding Assurance", Revision 1, October 2003.

V. C. Summer Nuclear Station, Units 2 and 3
COL Application
Part 1, General and Administrative Information

3. Regulatory Guide 1.206, "Combined License Applications for Nuclear Power Plants (LWR Edition)", Revision 0, June 2007.

1.3 GENERAL AND FINANCIAL INFORMATION

1.3.1 General Information

General information for the applicant is provided in Table 1. Information related to the financial qualification of the applicant to construct, operate, and decommission Virgil C. Summer Nuclear Station Units 2 and 3 is provided in Subsections 1.3.2 and 1.3.3, below. The applicant is not a newly-formed entity organized for the primary purpose of construction or operation of Virgil C. Summer Nuclear Station Units 2 and 3. SCE&G has been authorized by Santee Cooper to act as their agent in applying for a COL for VCSNS Units 2 and 3. Financial information regarding the ownership shares of VCSNS Units 2 and 3 held by SCE&G and Santee Cooper is provided in Subsection 1.3.3.

1.3.2 Financial Information

1.3.2.1 Decommissioning Costs and Financing

Decommissioning costs and financing of decommissioning at the end of the license periods are discussed in Subsection 1.3.3, below.

1.3.2.2 Financial Qualifications

SCE&G

SCE&G is an investor owned utility regulated by the South Carolina Public Service Commission. As such, the regulatory statutes provide for the recovery of costs prudently incurred on behalf of the retail customer. These costs include depreciation, taxes other than income, operations and maintenance expenses, fuel expenses, income taxes, and cost of capital. In May 2007, the South Carolina Legislature passed the Base Load Review Act, which provides for the expedited recovery of prudently incurred capital and operating costs associated with new coal-fired or nuclear base load electric generating facilities larger than 350 megawatts. The legislation also provides for approval of initial prudence and annual recovery of cost of capital on construction work in process (CWIP).

Capital requirements will initially be met through accessing the capital markets for debt and equity as needed to balance the company's capital structure targets. Historically, SCE&G and its parent company SCANA have had excellent access to the capital markets and continue to be highly rated by all credit rating agencies. The strong regulatory support in South Carolina should continue to have a positive influence on the Company's ability to raise external capital. Additional detailed general and financial information is readily available to the public at the Company's website at www.scana.com.

**V. C. Summer Nuclear Station, Units 2 and 3
COL Application
Part 1, General and Administrative Information**

Proprietary Information - Withheld under 10 CFR 2.390(b)

South Carolina Public Service Authority (Santee Cooper)

The South Carolina Public Service Authority is a body corporate and politic created under the laws of South Carolina. The Authority's Board of Directors is empowered and required to set rates as necessary, except for wholesale transmission rates, to provide for expenses, including debt service, of the Authority. There is no agency other than the Authority that has jurisdiction over the rates, except for wholesale transmission rates, of the Authority.

The Authority plans to finance its portion of the new plant through the issuance of short-term debt, long-term debt and internal equity, as needed. The Authority has had excellent access to the debt markets and is highly rated by all credit rating agencies. Additional detailed general and financial information is readily available to the public at the Authority's website at www.santeecooper.com.

Combined Project Costs

The table below contains estimates which represent the combined cost projections (as of December 2008) for SCE&G and Santee Cooper for the construction of VCSNS Units 2 and 3. All estimates are in millions of future year dollars. The estimates do not include capitalized interest.

	(millions of \$)
(a) Total nuclear production plant cost.....	\$ 9,838.3
(b) Transmission, distribution, and general plant costs.....	\$ 924.7
(c) Nuclear fuel inventory cost for the first core.	
(Acquired by purchase).....	\$ [] ^{Proprietary}
Total Estimated Cost.....	\$ [] ^{Proprietary}

Proprietary Information - Withheld under 10 CFR 2.390(b)

**V. C. Summer Nuclear Station, Units 2 and 3
COL Application
Part 1, General and Administrative Information**

1.3.3 Decommissioning Funding

10 CFR 50.75(b) requires that each power reactor applicant for an operating license for a production facility of a specified type and power level submit a decommissioning report as required by 10 CFR 50.33(k), indicating how reasonable assurance will be provided that adequate funds for performing decommissioning will be available at the end of commercial operation. Financial assurance must be provided for in an amount not less than the amount based on the formulas provided in 10 CFR 50.75 (c). The report must also state which of the mechanisms acceptable to the NRC will be used to provide financial assurance.

The calculations of the amount of decommissioning funds estimated to be required pursuant to 10 CFR 50.75 (c) and supporting assumptions are provided below. SCE&G and Santee Cooper will jointly own the facility and share in the costs (including the cost of decommissioning) and output of the facility as follows: SCE&G, 55%; Santee Cooper, 45%.

1.3.3.1 Decommissioning Estimate

Santee Cooper's 45% ownership share of 2007 Estimated Costs = \$164,524,500 per facility, totaling \$329,049,000 for 2 facilities.

SCE&G's 55% ownership share of 2007 Estimated Costs = \$201,085,500 per facility, totaling \$402,171,000 for 2 facilities.

The calculation of the amount of decommissioning funds estimated to be required pursuant to 10 CFR 50.75 (c) is provided below.
Base amount for a Pressurized Water Reactor greater than or equal to 3,400 MWt:

1986 Base Cost = \$105,000,000 (from 10 CFR 50.75(c)(1))

$$\begin{aligned} \text{Estimated Cost (Year X)} &= (1986\$ \text{ Base Cost}) (A L_x + B E_x + C B_x) \\ &= (\$105,000,000) ((.65 * 2.049) + (.13 * 1.981) + (.22 * 8.600)) \\ &= (\$105,000,000) (1.332 + .258 + 1.892) \\ &= \$365,610,000 \text{ per unit.} \end{aligned}$$

Where:

P = 3,400 MWt (thermal power rating)

**V. C. Summer Nuclear Station, Units 2 and 3
COL Application
Part 1, General and Administrative Information**

A = .65 Fraction of 1986 dollars attributable to labor, materials, and service (NUREG-1307, Rev. 12)

B = .13 Fraction of 1986 dollars attributable to energy and transportation (NUREG-1307, Rev. 12)

C = .22 Fraction of 1986 dollars attributable to waste burial (NUREG-1307, Rev. 12)

$L_x = 2.049$ Labor cost adjustment (Computed Below)

$E_x = 1.981$ Energy cost adjustment (Computed Below)

$P_x = 1.514$ U.S. Bureau of Labor Statistic's PPI of industrial electric power (Computed Below)

$F_x = 2.627$ U.S. Bureau of Labor Statistic's PPI of light fuel oils (Computed Below)

$B_x = 8.600$ LLW burial/disposition cost adjustment (NUREG-1307, Rev. 12)

$L_x = \text{Base 2005 } L_x * 4\text{th Quarter 2006 ECI} / 100 = 1.98 * 103.5/100 = \mathbf{2.049}$

$P_x = 03/2007 \text{ industrial electric power PPI} / 01/1986 \text{ industrial electric power PPI} = 172.9 / 114.2 = \mathbf{1.514}$

$F_x = 03/2007 \text{ Light Fuel Oils PPI} / 01/1986 \text{ Light Fuel Oils PPI} = 215.4/82 = \mathbf{2.627}$

$E_x = 0.58P_x + 0.42F_x = (0.58 * 1.514) + (0.42*2.627) = 0.878 + 1.103 = \mathbf{1.981}$

1.3.3.2 Decommissioning Funding

An external sinking fund in the form of a trust is the method that both SCE&G and Santee Cooper will use to provide reasonable assurance of the availability of its share of funds to decommission the facility. SCE&G and Santee Cooper recover the cost of decommissioning through electric rates. Amounts collected will be periodically transferred to the external trust. Such deposits along with trust fund earnings must provide an amount at least equal to the formula-derived decommissioning cost for the facility.

1.3.4 Foreign Ownership

South Carolina Electric & Gas Company and Santee Cooper are not owned, controlled, or dominated by an alien, foreign corporation, or foreign government.

1.3.5 References

**V. C. Summer Nuclear Station, Units 2 and 3
COL Application
Part 1, General and Administrative Information**

NUREG-1307, "Report on Waste Burial Charges" Revision 12, February 2007

1.4 OTHER LICENSES APPLIED FOR OR ISSUED

Environmental Report Tables 1.2-1, 1.2-2, 1.2-3 and 1.2-4 list the Licenses and Authorizations required for construction and operation of VCSNS Units 2 and 3.

**V. C. Summer Nuclear Station, Units 2 and 3
COL Application
Part 1, General and Administrative Information**

Table - 1 (Sheet 1 of 4) Applicant General Information	
Name of Applicant	South Carolina Electric & Gas Company
Address	220 Operation Way Cayce, South Carolina 29033
Description of Business	SCE&G is a regulated public utility engaged in the generation, transmission, distribution and sale of electricity to approximately 610,000 retail and wholesale customers in a service area covering more than 15,000 square miles in the central, southern and southwestern portions of South Carolina. SCE&G is also engaged in the purchase and sale of natural gas, primarily at retail, to approximately 292,000 customers in a service area covering more than 22,000 square miles in central and southern South Carolina.
Principal business location	220 Operation Way Cayce, South Carolina 29033
Name of Co-Applicant	South Carolina Public Service Authority (Santee Cooper)
Address	One Riverwood Drive P. O. Box 2946101 Moncks Corner, South Carolina 29461
Description of Business	Santee Cooper is South Carolina's state-owned electric and water utility, directly serving more than 155,000 residential and commercial electric customers in Berkeley, Georgetown and Horry counties. Santee Cooper also generates the power distributed by the state's 20 electric cooperatives to more than 665,000 customers in all 46 counties. Santee Cooper also provides power to the municipalities of Georgetown and Bamberg, the Charleston Air Force Base, and 32 industrial customers. Santee Cooper is the largest producer of electricity in the state with more than 2 million customers receiving their power directly or indirectly from Santee Cooper. Santee Cooper also treats water from Lake Moultrie and provides treated water to 125,000 end-users.
Principal business location	One Riverwood Drive P. O. Box 2946101 Moncks Corner, South Carolina 29461

**V. C. Summer Nuclear Station, Units 2 and 3
COL Application
Part 1, General and Administrative Information**

Table - 1 (Sheet 2 of 4)			
Applicant General Information			
Names, addresses, and citizenship of directors and officers:			
Company	Name and Title	Address	Citizenship
SCANA	William B. Timmerman – President and Chief Executive Officer SCANA Corporation and all subsidiaries	220 Operation Way Cayce, South Carolina 29033	USA
SCE&G	Kevin B. Marsh – President and Chief Operating Officer, SCE&G	220 Operation Way Cayce, South Carolina 29033	USA
SCE&G	Stephen A. Byrne – Executive Vice President Nuclear Operations and Chief Nuclear Officer, SCE&G	220 Operation Way Cayce, South Carolina 29033	USA
SCANA	Jimmy Addison – Senior Vice President and Chief Financial Officer SCANA Corporation and all subsidiaries	220 Operation Way Cayce, South Carolina 29033	USA
SCE&G	Charles B. McFadden – Senior Vice President, Government Affairs and Economic Development, SCE&G	220 Operation Way Cayce, South Carolina 29033	USA
SCANA	Ronald T. Lindsay – Senior Vice President, General Counsel and Assistant Secretary SCANA Corporation and all subsidiaries	220 Operation Way Cayce, South Carolina 29033	USA
SCANA	Sarena D. Burch – Senior Vice President Fuel Procurement and Asset Management, SCANA Services, Inc.	220 Operation Way Cayce, South Carolina 29033	USA

**V. C. Summer Nuclear Station, Units 2 and 3
COL Application
Part 1, General and Administrative Information**

Table - 1 (Sheet 3 of 4)			
Applicant General Information			
Names, addresses, and citizenship of directors and officers:			
Company	Name and Title	Address	Citizenship
SCE&G	Paul V. Fant – President and Chief Operating Officer – Carolina Gas Transmission, Senior Vice President Transmission Services, SCE&G	220 Operation Way Cayce, South Carolina 29033	USA
SCANA	James P. Hudson – Vice President – Human Resources SCANA Corporation	220 Operation Way Cayce, South Carolina 29033	USA
SCANA	George J. Bullwinkel, Jr. – President and Chief Operating Officer of SCANA Energy Marketing, Inc., SCANA Energy-Georgia, SCANA Communications, Inc. and ServiceCare, Inc.	220 Operation Way Cayce, South Carolina 29033	USA
Santee Cooper	Lonnie N. Carter – President and Chief Executive Officer	One Riverwood Drive P. O. Box 2946101 Moncks Corner, South Carolina 29461	USA
Santee Cooper	Bill McCall, Jr. – Executive Vice President and Chief Operating Officer	One Riverwood Drive P. O. Box 2946101 Moncks Corner, South Carolina 29461	USA
Santee Cooper	Elaine G. Peterson – Executive Vice President Chief Financial Officer	One Riverwood Drive P. O. Box 2946101 Moncks Corner, South Carolina 29461	USA
Santee Cooper	Jim Brogdon, Jr. – Senior Vice President General Counsel	One Riverwood Drive P. O. Box 2946101 Moncks Corner, South Carolina 29461	USA
Santee Cooper	Rennie M. Singletary, III – Senior Vice President Corporate Services	One Riverwood Drive P. O. Box 2946101 Moncks Corner, South Carolina 29461	USA

**V. C. Summer Nuclear Station, Units 2 and 3
COL Application
Part 1, General and Administrative Information**

Table - 1 (Sheet 4 of 4) Applicant General Information	
Dates for Completion of Construction:	
Unit 2	
Earliest	Latest
April 1, 2016	June 1, 2018
Unit 3	
January 1, 2019	June 1, 2021
Regulatory Agencies with Jurisdiction over Rates and Services	
Public Service Commission of South Carolina	Address of Regulatory Agency 101 Executive Center Drive Suite 100 Columbia, SC 29210
Trade and News Publications to give reasonable notice of the application	
The State Newspaper	Address of Publications <u>Mail:</u> P. O. Box 1333 Columbia, SC 29202 <u>Physical:</u> 1401 Shop Road Columbia, SC 29201-4843
The Herald Independent Newspaper	<u>Mail:</u> P. O. Box 90 Winnsboro, SC 29180 <u>Physical:</u> 127 N. Main Street Winnsboro, SC 29180
Post & Courier Newspaper	134 Columbus Street Charleston, SC 29403